

8. Arrange for a model or demonstration, using a small controlled population.

### Conclusion

The vigor and dedication that characterize private groups who conduct organ procurement was quite evident at the workshop. What should be the new charge to those working in the field of organ procurement?

As Surgeon General, I believe that the organ procurement effort should remain in the private sector. I do not believe that government should take it over, but I do see that we have a role to act as catalyst. We can convene meetings. We can use our moral suasion, and I intend to do that in the future so that progress is as rapid as possible.

I agree fully with an excerpt from the preamble of one discussion group report: "Individuals and organizations should continue their specialized efforts but need now to identify common interests

and unite in the pursuit of goals that are beyond the ability of any one person or group to accomplish."

### References

1. The Gallup Organization, Inc.: Attitudes and opinions of the American public toward kidney donation. National Kidney Foundation, Inc., 2 Park Ave., New York (1983).
2. Callender, C. O., Bayton, J. A., Yeager, C., and Clark, J. E.: Attitudes among blacks toward donating kidneys for transplantation: a pilot project. *J Natl Med Assoc* 74: 807-809 (1982).
3. Evans, R. W.: The present and future need for and supply of organs for transplantation. Update Report No. 33, National heart transplantation study. Battelle Human Affairs Research Centers, Seattle, Wash., 1983.
4. Overcast, T. D., et al.: Problems in the identification of potential organ donors: misconceptions and fallacies associated with donor cards. *JAMA*. In press.
5. Bart, K. J., et al.: Increasing the supply of cadaveric kidneys for transplantation. *Transplantation* 31: 383-387 (1981).

## Continuing Education for Maternal Child Health Nurses: A Means to Improve the Health Care of Mothers and Children

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### SYNOPSIS

The University of Kentucky College of Nursing is in the 7th year of implementing a 7-year federally funded continuing education project. The major goal of MCH (maternal child health) Project 969, which is scheduled to terminate Sept. 30, 1984, is to develop and offer a series of quality continuing

education courses for three distinct populations—practicing maternal child health nurses, State nurse consultants, and nurse supervisors at county or district levels. The purpose of these courses is to improve the practice of the participating nurses and thereby ultimately to improve the health status of mothers and children in Region IV of the Department of Health and Human Services.

Evaluation of the project by its staff after its first 5 years showed that (a) it has provided a series of continuing education courses of high quality; (b) met its goals and objectives; (c) provided continuing education for practicing maternal child health nurses that has improved MCH nursing practice in Region IV; (d) provided continuing education for State nurse consultants that has enabled them to become more effective leaders in their respective States; (e) used previously untapped resources in Region IV to make the concept of regional continuing education in maternal child health nursing a reality; and (f) generated a networking system among State nurse consultants, nurse educators, and nurse leaders in other service-oriented Title V programs that has been most effective in meeting the learning needs of the three distinct populations it serves.

**C**ONTINUING EDUCATION FOR HEALTH PROFESSIONALS has multiple goals, ranging from promoting a system of lifelong learning to ensuring ongoing professional competence. However, its effectiveness in meeting these goals is widely debated. Sometimes it is granted intuitive support and sometimes critical skepticism, but in either case, the response is usually based on opinion rather than on sound data (1). Continuing education is costly to the employee (learner), to the employer, and ultimately to the consumer of professional services. In this age of the shrinking dollar and the call for accountability in both health and education, some people question whether it is worth the investment in time, energy, and resources and are demanding justification of the investment in terms of gains. Like other providers of professional continuing education, providers of nurses' continuing education are being challenged to offer practicing nurses quality continuing education that will satisfy their needs in these times when scientific and technological discoveries and changing conditions in society continually dictate changes in nursing practice.

To help meet this challenge, the University of Kentucky College of Nursing's Continuing Education Program received a 3-year Federal grant in 1977 from the Department of Health, Education, and Welfare (Bureau of Community Health Services, Office of Maternal and Child Health)—now the Department of Health and Human Services (Bureau of Health Care Delivery and Assistance, Division of Maternal and Child Health). The purpose of the grant was to provide continuing education for maternal child health nurses in public health systems in DHHS (Department of Health and Human Services) Region IV (Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, and Tennessee).

With this grant, Maternal Child Health Project 969 was established, and a series of continuing education courses in maternal and child health (MCH) were developed and offered to registered nurses practicing in public health programs in DHHS Region IV. The results of the first 5 years (1977–82) of this federally funded continuing education project are presented here.

Long before MCH Project 969 began, the health problems of the mothers, infants, and children in Region IV had been causing concern among regional and national health officials. The high infant mortality rate was one of these concerns. The rate in the United States in 1977 was 14.1 per 1,000

live births, and all eight Region IV States exceeded the national average, with rates ranging from 14.4 to 18.2. Other maternal and child health problems, such as the increasing teenage pregnancy rate and the continuing high rates of low birth-weight babies and babies born with handicapping conditions, imposed severe economic and social burdens on the public health systems. Maternal child health nurses were increasingly having to assume added responsibilities and new roles in the preventive health care and health care maintenance of the MCH population. To do so effectively, many of the nurses needed new knowledge and skills and an opportunity to evaluate and perhaps change old attitudes and values.

Thus, when funds became available through MCH Project 969, a series of continuing education courses was designed to meet the learning needs of the nurses who were providing services to MCH clients in public health systems throughout the eight States in Region IV. This series of courses for MCH nurses is referred to as the primary thrust. Subsequently a secondary and a tertiary thrust were added to the project. The secondary was designed to meet the learning needs of nurse consultants and the tertiary, the learning needs of nurse directors and supervisors at county and district levels.

### **Objectives of the Three Thrusts**

**Primary thrust.** The series of continuing education courses for practicing MCH nurses, referred to as the primary thrust, has the following objectives.

1. To provide the nurses an opportunity to explore the total health problems of infants, mothers, and children, especially those relevant to the nurse's particular area of practice.

2. To provide the nurses an opportunity to increase their competence in health maintenance and health teaching (another equivalent term for anticipatory guidance).

3. To provide the nurses an opportunity to improve their skill in casefinding as their knowledge and competence increase.

4. To measure the impact of the series of continuing education courses upon the cognitive, affective, and psychomotor competencies of the nurse participants.

**Secondary thrust.** In 1980, after significant progress had been made in achieving these objectives, a 2-year continuation grant for the project was re-

ceived, and a second series of courses for a new target population was offered. This new effort, termed the secondary thrust, was designed to prepare nurse consultants of the State Maternal Child Health-Crippled Children's Service (MCH-CCS) to become more effective leaders. The operational objectives of the secondary thrust are as follows:

1. To provide State MCH and CCS nurse consultants an opportunity to explore new concepts, new ways of thinking, and new problem-solving approaches appropriate to their leadership roles as consultants.

2. To provide the MCH and CCS nurse consultants an opportunity to improve their skill in conducting a staff development program for the practicing MCH nurses under their supervision.

**Tertiary thrust.** When funding was provided for a third project period (1982-84), a tertiary thrust was added. Designed to meet the learning needs of nurse directors and supervisors at the county and district levels, this thrust has the following operational objectives:

1. To provide selected nurses in middle-management leadership positions an opportunity to explore new models for implementation of MCH programs at their respective levels.

2. To provide selected nurses an opportunity to acquire the new knowledge and skills needed to become better managers and leaders of MCH programs.

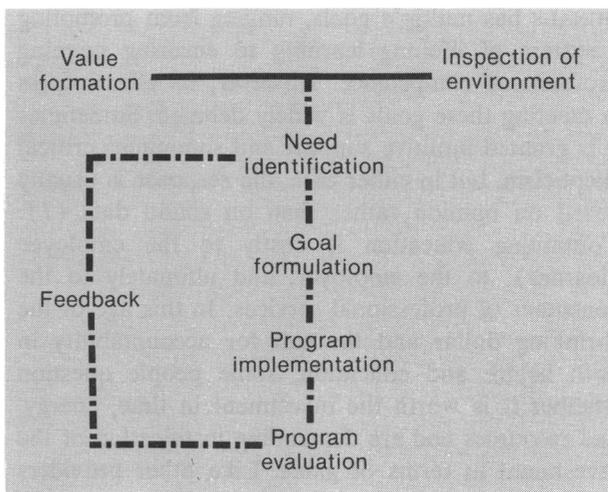
## Methods

The staff administering MCH Project 969 consists of a project director, an assistant project director, a consultant, and a course facilitator. The position of course facilitator is funded; the other three positions are filled by full-time college faculty, who contribute their time to the project.

The project staff selected the Kiresuk-Lund model (2) to follow in planning, implementing, and evaluating the project because they believed that use of this dynamic evaluation model would provide the project with flexibility and continuity. The evaluation processes in the model are shown in figure 1.

**Value formation and inspection of environment.** The first step of the Kiresuk-Lund model entails (a) value formation—specifying the values upon which a project is based, and (b) inspection of the environment—determining whether those values are being realized.

Figure 1. Schematic of Kiresuk-Lund model for evaluation of a program



The high priority that our society assigns to health and fitness is evidenced in the variety of Federal programs and projects that have been established to improve the well-being of the U.S. population, including of course mothers and children. The value placed on education is evidenced in the large number and the variety of institutions and programs established to provide it, including those that provide nurses with continuing education to improve their knowledge and skills. Also inherent in the three thrusts of MCH Project 969 are beliefs in these values, combined with a conviction that nurses can make a significant contribution to health care and, thus, to health.

Another belief that is fundamental to MCH Project 969 is that nurses, through their relationships with their clients and their active participation in administrative decisions at local, district, and State levels can favorably affect the quality and quantity of health care available to mothers and children. The project's four cornerstones are professional concern for the well-being of the mothers, infants, and children (families) in Region IV; personal empathy with the many mothers and children who are financially or emotionally impoverished; a commitment to make the health care system work effectively for these mothers and children; and a belief that the health care system, being composed of caring people, is not powerless to provide help to those who need it (3a).

**Assessment of needs.** The second step in the Kiresuk-Lund model is to assess the needs of the learner. Two distinct phases are involved in this assessment: (a) applying a measuring tool, or an

assortment of measuring tools, to a defined area of learning needs and (b) assessing the significance of the information gathered to determine the priority of each need.

The project staff realized that meaningful identification of learner needs would not be possible without the aid of maternal child health nurse leaders in education and in the nursing service who have first-hand knowledge both of health care problems and of the deficits that exist in the knowledge and skills needed to tackle the problem areas. The DHHS consultant for MCH Project 969 in the Division of Maternal Child Health therefore put the project staff in touch with 75 general maternal child health or public health nursing consultants throughout Region IV. Over a 4-week period, the project staff then telephoned these consultants. The consultants expressed excitement about the potential impact of the project and confirmed the project staff's belief that the practicing MCH nurses had many unmet learning needs. The consultants envisaged a series of continuing education courses targeted at these nurses that would meet many of those learning needs and, thus, ultimately improve the delivery of health care to mothers and children in Region IV. They helped the project staff formulate a tool for identifying learning needs, basically by determining the problems that exist in nursing practice and the continuing education courses that were required to address them. In addition, the telephone calls led to the establishment of a networking system that the project staff believes is the key to the success of MCH Project 969. Not only did the consultants help devise a tool for identifying learning needs; they also committed themselves to implementing the project. This commitment grew rapidly, and now the network of MCH-CCS nursing consultants provides the impetus for the continued growth and development of the project. The consultants identified and removed many of the obstacles that could have short-circuited its implementation. They have worked tirelessly to remove red tape and penetrate bureaucratic barriers so that the project staff could plan, implement, and evaluate the continuing education courses offered under this project (3b).

The data provided by the consultant network on the practice problems and continuing education needs of the public health nurses providing MCH services were synthesized and organized into a needs identification questionnaire, which was distributed to 1,000 practicing MCH nurses throughout Region IV. The consultants in the emerging network provided the project staff with mailing lists and en-

*'A major strength in the implementation of the primary thrust is the close working relationship that has been established between the project staff and the State planning committees.'*

couraged nurses to return the questionnaires sent them. Six hundred ninety-two of the questionnaires, or 69.2 percent, were returned. The assessment of needs, however, is ongoing. Each time a questionnaire is circulated or recirculated, the consultants facilitate both its distribution and return. The needs assessment process has been invaluable in planning and implementing the primary, secondary, and tertiary thrusts of this project. (For a copy of "Needs Assessment," contact the senior author.)

The needs assessment has generated a learner's profile. Some of its highlights are listed in the following table, which shows the percentage distribution of the respondents by kind of nurse, kind of position, education, and opinions about the continuing education courses.

<i>Item</i>	<i>Percent of respondents</i>
<b>Kind of nurse:</b>	
Community health .....	69
Practicing maternal child health .....	28
<b>Position:</b>	
Practicing staff .....	63
Administrator .....	21
<b>Education:</b>	
Diploma in nursing .....	48
Baccalaureate degree in nursing .....	27
Associate degree in nursing .....	17
Master's degree in nursing .....	8
<b>Opinions about continuing education courses:</b>	
Combination of clinical practice and theoretical concepts should be taught .....	83
Should preferably be presented by nurse educators .....	48
Should preferably be presented by physicians	6

The large majority of the respondents preferred a 2-day course on a weekday in the spring or fall, not more than 100 miles from their home. The project staff has made every effort to consider these preferences in planning courses.

The consultants' network provided the project staff with a wealth of information that was used in planning and implementing the secondary thrust. The consultants participated in a phenomenological study (a descriptive study concerned with concrete experience) that was designed to illuminate the

“lived world” of nursing consultation (4). Data from that study were used in shaping the secondary thrust, which focused on meeting the continuing education needs of the emerging network of consultants. Subsequently the consultants completed additional questionnaires to provide the project staff with insight into the new learning needs that were arising as a result of the rapid changes in the health care system.

Although invaluable in program planning, needs assessment has not been the sole criterion for course selection. Other criteria include State service priorities (such as instituting programs to track the high-risk infant), the availability of continuing education in maternal child health from other providers within a given State, and the continued practical advice and counsel of the State nursing consultants.

**Formulation of goals.** The third step in the Kiresuk-Lund model is goal formulation, a dynamic

and interdependent process, carried out jointly by the State nursing consultants and the project staff. Since the advent of block grants, the priorities and goals for the health care system have been in a constant state of change. Without valid input from the MCH-CCS nursing consultants in the eight States, the project staff would not have been able to identify appropriate goals and objectives for the primary, secondary, and tertiary thrusts of the project. Each year ad hoc planning committees are formed in each State in Region IV, and under the direction of the project staff, they plan the project’s activities for the coming year. Composition of these committees changes with the target population and the course topic. These planning committees are composed of MCH-CCS nursing consultants and other members of the interdisciplinary health team—physicians, nutritionists, social workers, and health educators on the cutting edge of service delivery. The planning committees review the needs assessment

Table 1. Titles of courses, times given, and number of participants in the 6 funding years of Maternal Child Health Project 969

<i>Phase, target group, and course title</i>	<i>Times course was given</i>	<i>Number of participants</i>
<i>Funding year 1—primary thrust—practicing MCH nurses</i>		
Health assessment of the young child .....	2	....
Effective prenatal care and identification of the high risk client .....	1	....
Total .....	3	226
<i>Funding year 2—primary thrust—practicing MCH nurses</i>		
The exceptional child .....	1	....
School health nursing .....	1	....
The adolescent client .....	1	....
Health assessment of the school-aged youth .....	1	....
On becoming an adult .....	1	....
Care of the pregnant family .....	1	....
Maternity management update .....	1	....
Total .....	7	481
<i>Funding year 3—primary thrust—practicing MCH nurses</i>		
The adolescent client .....	3	....
Maternity management update .....	2	....
Developing realistic plans of care for the developmentally delayed child and his family .....	1	....
Changing concepts in nursing care of the developmentally delayed child .....	1	....
Total .....	7	808
<i>Funding year 4—primary thrust—practicing MCH nurses</i>		
Helping families cope with the developmentally delayed child .....	1	....
Maternity management update .....	2	....
The multi-handicapped child .....	1	....
The adolescent client .....	2	....
The healthy school-aged child .....	1	....
Family-centered approaches to the clinical management of the child with a handicapping condition .....	1	....
Total .....	8	701
<i>Funding year 4—secondary thrust—MCH-CCS nurse consultants</i>		
Better consultation for the 1980s .....	1	....
Marketing maternal child health .....	1	....
Total .....	2	67

data, service priorities, and the resources of other continuing education providers (such as other colleges and universities) to determine what the specific goals of the project in their State should be for the particular year. On the basis of these goals, target populations for continuing education are then identified, and courses are selected and designed.

MCH Project 969 provides a limited number of course participants with a course fee and a modest stipend. Because the project courses are offered in all eight States in Region IV, the majority of nurses participating in them have been able to obtain in-State travel funds from the agencies in which they work or else have been able to underwrite their own expenses. Rather than have participants travel to the University of Kentucky, the university's faculty and the course presenters have traveled to the participants. Thus, attendance at courses has not been limited to nurses receiving Federal support to attend them. The interdependent planning that is carried out yearly has enabled the project staff to be flexible in establishing goals and priorities to meet the

particular learning needs of nurses in Region IV States as these needs emerge.

**Implementation.** Implementation is the fourth step in the Kiresuk-Lund model. In our project, implementation consists of planning and delivering continuing education to the target populations. In the first 5 years of the 7-year project, 36 courses were planned and delivered to 3,152 practicing community MCH nurses, and 4 courses were planned and delivered to 125 State nursing consultants (table 1). During the 5 years, enrollment climbed from 200 to 900 annually. In the 1982-83 project year, 10 primary, 1 secondary, and three tertiary thrust courses were conducted with an enrollment of 924 nurses.

*Primary thrust courses.* The primary thrust courses, which have varied in length from 2 to 4 days, have focused on a variety of maternal child health practice issues, including adolescent health, school health, maternity management, child health assessment, family-centered approaches to the care

Table 1. Titles of courses, times given, and number of participants in the 6 funding years of Maternal Child Health Project 969  
(Continued)

<i>Phase, target group, and course title</i>	<i>Times course was given</i>	<i>Number of participants</i>
<i>Funding year 5—primary thrust—practicing MCH nurses</i>		
Child health maintenance .....	5	....
Family-centered approach to handicapped, developmentally delayed, or chronically ill child .....	1	....
Adolescent client .....	1	....
Realities in school health .....	1	....
Total .....	8	762
<i>Funding year 5—secondary thrust—MCH-CCS nurse consultants</i>		
The new federalism .....	1	....
Problem solving in consultation .....	1	....
Total .....	2	58
<i>Funding year 5—tertiary thrust—county and district nurse leaders</i>		
Change in the health care system (pilot program) .....	1	49
<i>Funding year 6—primary thrust—practicing MCH nurses</i>		
Prenatal nursing management .....	4	....
Focus on the family: a nursing perspective .....	1	....
Early identification and management of developmental delays in the child ages 1 to 6 .....	2	....
Maternity management update .....	2	....
Clinical concepts in prenatal management .....	1	....
Total .....	10	1692
<i>Funding year 6—secondary thrust—MCH-CCS nurse consultants</i>		
Research public policy and ethical dilemmas in maternal child health care .....	1	148
<i>Funding year 6—tertiary thrust—county and district nurse leaders</i>		
Integration of health services .....	1	....
Supervision in public health nursing .....	1	....
Leadership in public health nursing .....	1	....
Total .....	3	1271

<sup>1</sup> Projected.

*'Nurses participating in Project 969 courses were significantly more critical of their actual nursing care than were their supervisors. This result enhanced our confidence in the reliability and validity of the course participants' reports.'*

of children with handicapping conditions, and parenting. The courses are apportioned among the eight States and are tailored to meet the learning needs of the nurses in the State in which they are offered. Attendance, however, is not limited to nurses in the host State, and as a rule, nurses from several States attend each course. Ideas are freely exchanged both during the courses and after hours. The project staff believe that this exchange of ideas across State lines has served as a catalyst for change and has stimulated informal communication among the practicing MCH nurses in Region IV.

A major strength in the implementation of the primary thrust has been the close working relationship that has been established between the project staff and the State planning committees. Even though a course has been conducted previously in another State, it is subjected by each State planning committee to an intensive replanning or retooling process to assure its relevancy for the specific target population. Additionally, the planning committees and the project staff involve the nurse educators in major colleges and universities throughout Region IV and the nursing leaders from Title V-funded programs in the implementation of MCH Project 969. Thus, the network has extended from State nurse consultants to other nursing professionals.

Many creative approaches have been taken to reduce the cost of the courses to participants. The planning committees have also used a variety of approaches to maximize the impact of the particular course. For example, they have identified local talent to present courses to the target populations, in addition to the nationally recognized speakers provided by the project itself. Local people also are often willing to serve as resources to participants following completion of a course. In certain cases, the committees have recommended that stipend funds be reallocated to pay one person to conduct two or more

courses in rural areas rather than to pay a few participants a stipend to attend a course in an urban area. Additionally, the committees have sought other institutions to cosponsor MCH Project 969 courses, such as State departments of public health and major State universities, thereby enhancing and facilitating the continuously evolving networking process. Such recommendations have made the continuing education offered more accessible and affordable to a greater number of nurses.

*Secondary thrust courses.* The secondary thrust courses that provide continuing education to State Maternal Child Health and Crippled Children's Service nursing consultants are designed to enhance the consultants' effectiveness in providing leadership, consultation, staff development, and technical assistance to the practicing MCH nurses who are served by the primary thrust. A major goal of the courses for the consultants is to facilitate both formal and informal networking. To help attain it, secondary thrust courses have been conducted in quiet rustic settings, away from the distractions of a metropolitan center. The project staff has found that environment plays a major role in setting the tone for informal networking. Nationally recognized nurse leaders have met with the consultants in these quiet settings to discuss such topics as the multiple roles of the MCH-CCS nurse consultant, the marketing of maternal child health nursing to the persons who allocate resources, the use of power and the political process, problem solving, evaluation, public policy, research, and ethical issues.

The exciting dialog that has begun among these leaders and the course participants has continued after the course is over. Consultants are now on a first-name basis with each other and with the nurse leaders who have presented the courses for this network. The State consultants profit from the success and failures of their colleagues in other States and consult with each other. Periodically, a data sheet is distributed to the consultants to elicit areas in which they feel competent to offer consultation, as well as to identify areas in which they need help. This information, compiled on a master sheet and circulated to all consultants, includes phone numbers and mailing addresses. Plans are also in progress to initiate two new networking efforts—a consultant exchange program and a mentorship program. State consultants will cross State lines within Region IV to give or receive indepth, goal-directed consultation, technical assistance, or both, relating to a variety of current MCH issues and problems. These

two new programs will deepen and broaden the scope of the networking process that has already begun.

*Tertiary thrust courses.* The tertiary thrust was implemented in 1982–83, the 6th year of the project. Each State planning committee has had the option of selecting a primary or a tertiary thrust course for its State. Committees in three of the eight States in Region IV selected a tertiary thrust course; the other five preferred a primary thrust course. Tertiary courses have focused on such topics as dealing with change effectively, strategies for integrating MCH services, styles of leadership, and effective management.

**Evaluation.** Evaluation is the fifth step in the Kiresuk-Lund model. In evaluating MCH Project 969, now in its 7th year of implementation, emphasis has been placed on (a) the impact of the continuing education courses on the quality of the practice of the 3,152 maternal child health nurses in Region IV who participated in the project during its first 5 years and (b) the success of networking in releasing the dynamic power and energy to implement the project across eight States. Throughout the 7-year project, evaluation has been of major interest and concern to the project staff. Both formative (process) and summative (product) parameters are an integral part of the evaluation design.

Process evaluation has been used extensively to improve courses. Several of the courses that have been offered more than once have benefited from the continued refinement made possible by the data collected from the pre- and posttests and from the questionnaires completed by the course participants and their supervisors.

The ultimate goal of product evaluation is to judge the value and worth of a program. The project staff wants to provide the Federal grantors, the University of Kentucky College of Nursing, State MCH-CCS nursing consultants, and course participants with data they can use in judging the value of this project. Therefore product evaluation data have been collected from the various questionnaires mailed to both participants and their supervisors. In addition, State nursing consultants provide the project staff with an informal assessment of the impact of particular continuing education courses on the practice of individual nurses. This feedback has been invaluable in helping us understand the dynamic relationship between continuing education and practice. Also, the consultants have worked tire-

lessly to facilitate the participation of the nurses in their States in the evaluations.

The summative evaluation questions addressed by the evaluation design are:

1. Has the project provided quality continuing education to practicing maternal child health nurses in Region IV?

2. Has the project met its goals and objectives?

3. Have the continuing education offerings provided by the project improved the nursing practice of the 3,152 maternal child health nurses in Region IV?

4. Have the continuing education courses provided by the secondary thrust enhanced the nurse consultants' ability to provide leadership to the MCH programs in their respective States?

5. Has the project used untapped resources in Region IV to implement the concept of regional continuing education?

Several approaches were chosen to answer these questions. Cognitive and attitudinal gains (or changes) resulting from attendance at the courses have been identified through pre- and posttesting. The participant questionnaire (the evaluation questionnaire administered immediately after each course) was designed to collect evaluation data on input, the process, and the immediate outcomes of the course. In addition, followup questionnaires with parallel items were used to elicit long-term outcome data for both participants and their supervisors.

*Reliability of evaluation instruments.* The project staff made every effort to establish the reliability of its evaluation instruments. On the participant questionnaire, four categories of data were collected: (a) biographical, (b) classroom climate, (c) participant satisfaction, (d) outcomes. By factor analysis, we were able to identify the questions that were the best indicators of classroom climate, participant satisfaction, and short-term outcomes. This knowledge enabled us to construct a reliable questionnaire. A reliability coefficient was obtained by using the Statistical Package for the Social Sciences (SPSS) reliability program for additive subscales. Cronbach's alpha for each subscale was 0.83 for classroom environment, 0.90 for participant satisfaction, and 0.57 for short-term outcomes. Using Cronbach's alpha, we found the overall reliability of our questionnaire to be 0.91. The lower reliability for the outcomes subscale was explained by the factor analysis. The outcome subscale includes (a) the in-

*'... the course participants reported improvements over time in selected areas of their nursing practice. And the project staff believes that improved quality of practice translates into improved quality of health care.'*

tent to use the course content in clinical practice, (b) increased confidence, and (c) changes in educational or occupational aspirations. The factor loadings (regression coefficients) on changes in educational and occupational aspirations, as well as in attitudes and values, were low and seemed to reflect a different set of outcomes than increased confidence or the intent to use the course content in clinical practice (5). However, because both types of short-term outcome data are helpful to the project staff in evaluating courses, these data are included in the outcomes subscale. The followup questionnaire likewise was subjected to extensive study and revision to ensure reliability and validity.

During the third year of the project, parallel questionnaires, consisting of five subscales, were constructed for supervisors and participants. Subscale 1 elicited the opinion of the course participant and of the participant's supervisor as to the quality of nursing care that the participant provided after the course to the particular group of maternal child health clients on which the course focused. For example, if a participant attended a maternity management workshop, the questionnaire was designed to collect data about the nurse's ability to provide nursing care to the maternity client. Subscale 2 was designed to measure the overall objectives of MCH Project 969 in relation to the content that was presented during each course. The questions related to the nurse's ability to assess, plan, implement, and evaluate patient care, to give appropriate anticipatory guidance, and to provide preventive health maintenance for selected maternal child health populations. Subscale 3 was designed to measure the specific impact of a particular course on the participating nurse's confidence, competence, and quality of practice. Subscale 4 was designed to measure the support and encouragement that the participants had received from their supervisors and colleagues in implementing changes in their practice and was designed also to measure personal motivation. Subscale 5 was designed to measure barriers that pre-

vented participants from instituting changes in their practice based on the new knowledge and skills they had acquired during a course. The reliability coefficients for the subscales were as follows.

Subscale No.	Participant questionnaire	Supervisor questionnaire
1 .....	0.79	0.93
2 .....	.83	.90
3 .....	.76	.79
4 .....	.68	.67
5 .....	(1)	(1)

<sup>1</sup> Because of the diversity of questions on this subscale (that is, the values could not be added), a reliability coefficient was not computed.

The followup questionnaires completed by the participants and their supervisors were subjected to further statistical analysis. The project staff wanted to be certain that course participants were a reliable source of data because the validity of the evaluation design rested on that one major assumption. Of the 20 questions that were submitted to a Student's *t* test, 15 revealed no significant statistical difference at the 0.05 level between the participants' and their supervisors' responses. On these 15 questions, however, the mean scores revealed that as a whole, the course participants were slightly more critical of their performance than were their supervisors. Statistically significant differences were noted on subscale 1 (the quality of nursing care provided). This result enhanced our confidence in the reliability and validity of the participants' reports. No significant differences were noted between participants and supervisors on subscale 2, which measured the overall objectives of the project in relation to patient care. On subscale 3, no significant differences were revealed. Two predictable differences were identified by subscale 4, namely, on the amount of support that participants perceived they were receiving from colleagues and their supervisors in implementing changes in their practice. The supervisors believed that participants were receiving more support than the participants perceived they were receiving. Based on the results of this analysis, the project staff acquired confidence in the reliability and validity of the participants' reports and therefore selected the participant report as the method of evaluation for a time-series study conducted during the 4th and 5th years of the project.

In addition to the reliability studies, all evaluation instruments have been reviewed by a panel of experts consisting of the project staff and its advisory committee. This panel sought to determine whether the questions would be clear to the reader and ade-

quate to answer the issues raised in the evaluation design.

*Five summative evaluation questions.* The project staff sought answers to five summative evaluation questions.

1. The first of these questions was: Has MCH Project 969 provided quality continuing education to the 3,152 participants in the primary and secondary thrust courses over a 5-year period? The questionnaire completed by the course participants and their supervisors provided information on classroom climate, participant satisfaction, and short-term outcomes. This information and the reasons for participation are summarized in table 2.

2. The second summative evaluation question was: Has MCH Project 969 met its objectives and goals? Each operational objective for the project has been carefully evaluated. Responses to followup

Table 2. Responses on questionnaires by participants in MCH Project 969 courses to items about classroom climate, satisfaction with courses, short-term outcomes, and reasons for participation

<i>Topics and items</i>	<i>Percent of respondents</i>
<i>Classroom climate</i>	
Those presenting course were helpers and facilitators, interested in meeting participants' learning needs . . . . .	98
Mutual exchange of ideas was helpful . . . . .	97
Other participants were friendly and supportive, and future contacts with them would be helpful . . . . .	89
<i>Participant satisfaction</i>	
Quality of course was satisfactory . . . . .	98
Course was well organized . . . . .	96
Course met expectations and was challenging . . . . .	84
<i>Short-term outcome</i>	
Values and beliefs changed after course . . . . .	37
Course changed educational aspirations . . . . .	35
Confidence in knowledge base, clinical expertise, or both, increased . . . . .	87
New knowledge and skills gained in course could be used to provide clients with improved nursing care . . . . .	90
<i>Reason for participation</i>	
To improve competence . . . . .	73
For the personal satisfaction associated with new learning . . . . .	18
To meet mandatory continuing education requirements or to meet employers' expectations . . . . .	(1)

Less than 5 percent of respondents.

questionnaires revealed the percentages of course participants and their supervisors who believed that the project had met its goals and objectives.

The percentages of the course participants and their supervisors who agreed that the courses offered in the primary thrust of MCH Project 969 met specific operational objectives were as follows:

<i>Objectives</i>	<i>Percent of course participants</i>	<i>Percent of their supervisors</i>
To improve the assessment of patients' needs . . . . .	83	87
To improve planning . . . . .	85	88
To improve the quality of nursing care . . . . .	82	83
To improve the evaluation of nursing care . . . . .	95	90

Additionally, on followup questionnaires, 91 percent of the course participants reported an increased awareness of their role in preventive health maintenance as a result of the course, and 86 percent expressed the belief that their ability to provide appropriate health teaching to MCH clients had been enhanced. Seventy-eight percent indicated that their casefinding skills had been enhanced.

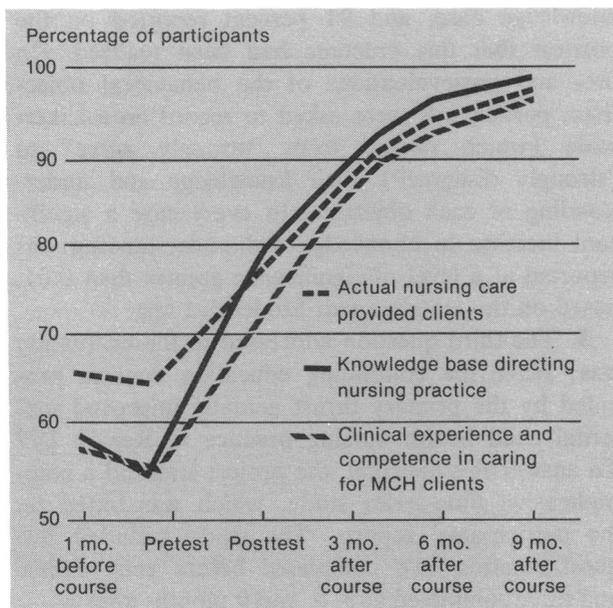
Pre- and posttests consistently demonstrated a 25 to 35 percent increase in mean scores following participation in primary and secondary thrust courses. Twenty-four percent of the participants had been satisfied with their knowledge base before participating in the courses, whereas 64 percent were satisfied with their knowledge base following the courses. On the pretest, 91 percent expressed the belief that participation in a project course would enhance their knowledge base, and 91 percent reported on the posttest that this outcome had been realized. On pre- and postevaluations of the behavioral objectives, participants were asked to record on a Likert scale (which ranged from "strongly agree" to "strongly disagree") their knowledge and understanding of each objective. In every case a significant increase in knowledge and understanding was reported at a level of significance greater than 0.01, based on the matched pair Student's *t* test.

3. The third question addressed in the evaluation was: Have the continuing education courses provided by the primary thrust actually improved maternal child health nursing practice in Region IV? To answer this question, the project staff did a comprehensive time-series study, which was based on the participants' reports. The study included five questionnaires, two completed before each course and three completed at 3, 6, and 9 months after it.

When the project staff undertook the time-series study, the primary question was: What happens with the passage of time? It was hypothesized that much of the course participants' initial enthusiasm would abate with time, enabling the project staff to quantitatively separate "happiness" data from sustained changes in knowledge, attitudes, and clinical skills. However, that hypothesis proved to be unfounded. Rather than a decrease in perceived satisfaction, confidence, competence, and positive attitudes over a 9-month period, these outcomes increased. For example, when asked to evaluate the knowledge base that directed their nursing practice for a particular MCH client group (specific by course), the percentage of participants reporting "Very good" increased from 22 percent at 3 months to 29 percent at 9 months. The same upward trend was evident in the course participants' replies to questions relating to their clinical competence and the actual nursing care they provided (fig. 2). On all questions on the subscales specific to the goals of MCH Project 969, the course participants reported improvements over the 9-month period, including an increased ability to serve as a role model for their colleagues (table 3). The trend on some questions was for percentage ratings to increase between the 3d and 6th months and to decline slightly between the 6th and 9th months, but to remain above the 3-month level.

The participants perceived declines over time in the support given them by their supervisors and colleagues, as well as declines in their own motivation

Figure 2. Combined upper-scale percentages for knowledge base, clinical expertise, and actual nursing care, before and after course, based on time series evaluation study



to improve their nursing practice or to implement changes in it. They identified inadequate resources and lack of time as the greatest barriers to improvements in their nursing practice in the work setting (table 3). These data indicate that those participating in MCH Project 969 courses believed that over time this participation had helped improve the quality of the nursing care they provided MCH clients. Although percentage gains were not dramatic in most cases, the project staff was pleased that scores did not decline over the 9-month period after the courses.

4. The fourth evaluation question addressed the quality and the impact of the secondary thrust courses. These courses for MCH-CCS nurse consultants are evaluated by essentially the same design as was used for the primary thrust; however, a time-series study is not being done. To date, five continuing education courses have been conducted specifically for these consultants over a 2-year period. The consultants report that the courses have enhanced their ability to provide leadership, consultation, technical assistance, and staff development to the people and programs they serve. Data on the participants' satisfaction with the courses and on the short-term outcomes also have been positive. Likewise, pre- and posttest evaluations of how well the courses have met the behavioral objectives reveal a significant increase in the consultants' knowledge and understanding of the issues and ideas on which these objectives were based. Neither the long-term impact of the courses or the consultant's ability to provide leadership and consultation to both people and programs has yet been determined. However, certain positive short-term outcomes have been noted. The consultants have reported an increase in the transfer of ideas and information across State lines. The consultants bring selected State plans for MCH programs, manuals, and other printed materials to each secondary thrust course for peer review. Also, as the consultants establish effective training programs within their States, they share their plans and resources with other consultants. In sum, the networking concept has facilitated a dynamic exchange among MCH-CCS consultants in Region IV.

5. The fifth evaluation question concerns the discovery of new resources to provide regional continuing education for MCH nurses. Many previously untapped human resources have been discovered in Region IV and have been used to implement this regional continuing education project. They include MCH-CCS State nursing consultants, faculties of

**Table 3. Percentage of respondents who agreed or strongly agreed with selected statements on combined upper scale of time series followup questionnaire**

<i>Responses to questionnaire items</i>	<i>3 mo. after course</i>	<i>6 mo. after course</i>	<i>3 mo. after course</i>
<i>Responses revealing positive trends over time:</i>			
Course improved ability to assess care .....	83.39	91.15	85.77
Course improved ability to plan care .....	84.93	89.41	84.49
Course improved actual quality of nursing care .....	79.46	85.72	81.04
Course improved ability to evaluate care .....	81.76	86.13	82.76
Course improved ability to provide anticipatory guidance .....	84.85	90.18	87.50
Course increased awareness of nurse's role in preventive health maintenance .....	87.71	91.33	91.77
Course enhanced casefinding knowledge and skills .....	73.49	73.82	78.03
Course enhanced confidence in practice .....	81.98	83.21	82.08
Course enhanced competence .....	76.95	84.24	79.19
Clients receive better care .....	76.79	77.98	78.02
Course made participant better role model .....	61.28	65.22	64.16
I would recommend course to colleagues .....	86.62	91.26	89.61
Employer believes you are a more valuable employee .....	27.28	29.63	34.49
<i>Responses revealing negative trends over time:</i>			
Problems in work setting make it difficult to implement change .....	38.70	40.96	36.99
I am receiving support from supervisors to implement change .....	55.17	51.31	49.71
I am receiving support from colleagues to implement change .....	46.94	46.12	45.66
My personal motivation to improve my nursing practice is high .....	80.68	79.04	76.38
The major barrier blocking change is lack of resources .....	32.87	39.87	34.17
The major barrier blocking change is lack of time at work .....	34.90	31.37	28.33
The major barrier blocking change is lack of staff to do the job .....	21.48	15.69	17.50

other schools and colleges of nursing with continuing education programs, and nursing leaders and experts from other Title V projects throughout the country. These nurse leaders have joined together to release a flow of creative energy that has resulted in an ever-expanding networking system that has provided the stimulus for the growth and development of MCH Project 969.

## **Conclusion**

The five questions originally posed by the project staff in the summative evaluation have thus been answered affirmatively.

First, the evaluation data indicate that MCH Project 969 has provided a series of quality continuing education offerings. The participants in the primary and secondary thrust courses have reported a high degree of satisfaction with the quality of the courses.

Second, MCH Project 969 has met its goals and objectives. Pre- and posttesting and followup studies have revealed that all the long-term and short-term objectives of the courses have been met.

Third, the continuing education courses provided in the primary thrust have improved MCH nursing practice in Region IV. A time-series study validated the belief of MCH Project 969 participants that the

courses had improved their ability to provide nursing care to MCH clients. The project staff recognizes the impossibility of establishing a causative relationship between the project and enhanced nursing skills, realizing that other system inputs may have skewed the results. Nevertheless, the course participants did report improvements over time in selected areas of their nursing practice. And the project staff believes that improved quality of practice translates into improved quality of health care for the mothers, infants, and children in Region IV. This has been, and will continue to be, the ultimate goal of this regional continuing education project.

Fourth, the continuing education courses provided in the secondary thrust have enhanced the ability of nurse consultants to provide leadership to the MCH programs in their respective States. Interviews with State nurse consultants throughout Region IV have shown that the secondary thrust has provided these consultants with new knowledge and ideas that have enabled them to become more effective leaders in their States. The nurse consultants also report that the network has facilitated their functioning in the consultant role.

Fifth, in MCH Project 969, untapped resources in Region IV have been used to implement the concept of regional continuing education. The network that has developed among State nurse consultants,

nurse educators, and nurse leaders in other service-oriented Title IV programs affords a dynamic strategy for meeting the learning needs of the target population of MCH Project 969.

## References .....

1. Lauffer, A.: The practice of continuing education in the human services. McGraw-Hill, Inc., New York, 1977, pp. 190-196.
2. Kiresuk, J. D., and Lund, S. H.: Goal attainment scaling. *In* Evaluation of human service programs, edited by

C. C. Attkisson, et al. Academic Press, Inc., New York, 1978.

3. Presler, E. P., and Bolte, I.: Discovering resources for continuing education. *Nursing Outlook* 30: (a) 454-458; (b) 454 (1982).
4. Edie, J. M.: What is phenomenology? Quadrangle Books, Chicago, 1969.
5. Nie, Norman H., et al.: Statistical package of the social services, second edition, McGraw Hill Book Company, 1970, p. 475.

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## Mortality from Flash Floods: a Review of National Weather Service Reports, 1969-81

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## SYNOPSIS .....

*Of all weather-related disasters that occur in the United States, floods are the main cause of death, and most flood-related deaths are attributed to flash floods (1). Flash floods are due to the fast runoff of water from heavy rains in a relatively short time, and runoff is accelerated in mountainous and narrow valley terrain. For example, the runoff from*

*30 or more deaths or more than \$100 million in property damage, the National Weather Service (NWS) forms a survey team to investigate the disaster and write a report of findings. All NWS survey reports on flash floods issued during 1969-81 were reviewed to determine the mortality resulting from such floods, the effect of warnings on mortality, and the circumstances contributing to death.*

*A total of 1,185 deaths were associated with 32 flash floods, an average of 37 deaths per flash flood. The highest average number of deaths per event was associated with the four flash floods in which dams broke after heavy rains. Although there were 18 flash floods in 1977-81 and only 14 in 1969-76, the number of deaths was 2½ times greater during the earlier period. More than twice as many deaths were associated with flash floods for which the survey team considered the warnings inadequate than with those with warnings considered adequate.*

*Ninety-three percent of the deaths were due to drowning and 42 percent of these drownings were car related. The other drownings occurred in homes, at campsites, or when persons were crossing bridges and streams.*

*The need for monitoring dams during periods of heavy rainfall is highlighted.*

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**O**F ALL THE WEATHER-RELATED DISASTERS that occur in the United States, floods are the main cause of death, and most flood-related deaths are attributed to flash floods (1). Flash floods are due to the fast runoff of water from heavy rains in a relatively short time, and runoff is accelerated in mountainous and narrow valley terrain. For example, the runoff from

heavy rainfall in a mountainous area near Tucson, Ariz., in July 1981 flooded a recreational area. Eight persons died when an 8-foot wall of water rushed down a canyon where 150 people were camping.

Limited information is available on the number of deaths that occur each year as a result of flash